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PAT 09/04/28-0149

PATENT

Attorney Docket No. 10995-2330

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Juro Ozeki et al.

Application No.: 10/524,135

Filed: April 5, 2008

For: Polyphenylene Ether Based Resin
Composition

Group Art Unit: 1798

Examiner: Patrick Dennis Niland

Confirmation No.: 2415

Commissioner for Patents
P.O. Box 1460
Alexandria, VA 22313-1460

Sir:

RULE 132 DECLARATION

I, TORU YAMAGUCHI, do hereby declare that I am one of the inventors of the above-identified application and that I am a citizen of Japan. That I graduated from Chiba Institute of Technology, Faculty of Engineering, Course of Industrial Chemistry in March 1980. That I have been employed by Asahi Kasei Kogyo Kabushiki Kaisha, a Japanese Corporation and the assignee of record of the above-identified application, since October of 1980. That since that time I have been principally engaged in research activities relating to the development of polyphenylene ether resin compositions.

I am familiar with the history of prosecution of this application and specifically the Examiner's opinion that the claims are unpatentable under 35 U.S.C. §103(a) for being obvious over Shiraki et al., in view of Coran et al.

To show that the claimed invention relating to a polyphenylene ether based resin composition comprising (a) from 10 to 93% by weight of a polyphenylene ether based

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resin and optionally a styrene based resin, (b) from 2 to 20% by weight of a styrene based thermoplastic elastomer modified with an imidazolidinone compound, and (c) from 5 to 60% by weight of a clay that has been surface treated with a silane compound is not obvious in view of these references, I conducted a number of experiments as set forth in the attached Appendix consisting of two pages. These experiments compare the properties of mixtures of polyphenylene ether, a thermoplastic elastomer and a clay. For a description of the elastomer b-2 and b-3 and the clay c-1 and c-3, see page 18, line 11 to page 20, line 13 of the specification. Example 2 and Comparative Example 3 are repeated from Table 1 on page 22 of the specification.

As a result of my experiments, I concluded that a polyphenylene ether based resin composition containing a styrene based thermoplastic elastomer modified with an imidazolidinone compound and a clay surface treated with a silane compound is superior to one containing an untreated clay instead of a silane treated clay while retaining the Drop Impact strength of a similar composition containing no clay at all. Compare Example 2 with the Reference Example and Comparative Example 4. Note that the composition of Example 2 essentially retained the Drop Impact strength and gloss of the composition of Comparative Example 4 which contained no clay, while achieving significantly improved IZOD Impact values and Elongation at break properties compared to the Composition of Comparative Example 4 as well as the Composition of the Reference Example containing an untreated clay.

The composition is also superior to one containing a different thermoplastic elastomer (i.e., b-2). Compare Example 2 with Comparative Example 3. Note the

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comments in the last paragraph of the Appendix are comparing Comparative Example 3 with Comparative Example 4.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: April 30, 2009

Toru Yamaguti
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4/30/09

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2024084400 TO 01181352039480# P.06APPENDIXAdditional Experimental Data (Reference Example)

	Unit	Ex. 2	Comp. Ex.3	Ref. Ex.	Comp. Ex. 4
Polyphenylene ether: a-1	%	71.4	71.4	71.4	71.4
Thermoplastic elastomer: b-2 b-3	%	5.5	5.5	5.5	5.5
Inorganic filler: c-1 c-3	%	22.0	22.0	22.0	
BHT	%	1.1	1.1	1.1	1.1
Aromatic phosphoric ester based flame retarder: d-1	Part	11.0	11.0	11.0	11.0
Drop impact strength	J	40	35	21	42
IZOD impact value	J/m	98	59	44	89
Flexural modulus	MPa	2700	3750	3680	2800
Elongation at break	%	80	22	27	19
Gloss	%	80	72	62	94

Comparing Reference Example with Comparative Example 4, the following changes due to the incorporation of inorganic filler can be seen:

Drop impact strength: lowered

IZOD impact value: almost no change

Elongation at break: slightly improved

Gloss: lowered

In contrast, comparing Invention Example 2 with Comparative Example 4, the following effects given by the specific combination of the present invention can be seen:

Drop impact strength: almost no change (value level is kept)

IZOD impact value: remarkably improved

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Elongation at break: remarkably improved

Gloss: not so much lowered

If thermoplastic elastomer b-3 is replaced with thermoplastic elastomer b-2 using a different modifier (Comparative Example 3), it gives the following results:

Drop impact strength: lowered

IZOD impact value: somewhat improved

Elongation at break: almost no change

Gloss: lowered